ABSTRACT

The invention includes PERK (Proline-rich Extensin-like Receptor Kinase) nucleic acid molecules and polypeptides. A receptor-like protein kinase designated PERK1 (Proline-rich Extensin-like Receptor Kinase 1) was isolated from a (-pistil cDNA library of Brassica napus. The deduced PERK1 protein is comprised of a cytoplasmic domain that contains all of the conserved amino acids prevalent among serine/threonine kinases, a transmembrane domain and an extracellular domain with sequence similarity to the extensin family of plant cell wall proteins. Northern blot analysis demonstrated that PERK1 mRNA accumulated rapidly in leaf and stem tissue of B. napus in response to wounding and treatment with salicylic acid. In contrast, no significant accumulation of PERK1 mRNA was detected following treatment with methyl jasmonate. The rapidity of PERK1 mRNA accumulation in response to these treatments shows a role in plant defense signaling.